

REMARKS

Claims 1-17 and 19 are pending in this application. By this Amendment, claims 1-17 and 19 are amended to cure informalities; claim 1 is further amended to incorporate the subject matter of claim 18; claims 16 and 19 are further amended to incorporate the subject matter of claims 18 and 20, respectively; claims 18 and 20 are canceled; and the specification is amended to correspond to the amended claims. No new matter is added by this Amendment.

I. Information Disclosure Statement

An information disclosure statement was filed in the U.S. Patent and Trademark Office on December 6, 2005. Applicants respectfully request the Examiner to initial each of the references cited therein and return the executed form PTO-1449 to Applicants' representative.

II. Allowable Subject Matter

Applicants thank the Examiner for the indication that claims 18 and 20 would be allowed if combined with their respective base claims and any intervening claims.

Claims 16 and 19 are each amended to incorporate the subject matter of claims 18 and 20, respectively. Accordingly, claims 16 and 19, as well as dependent claim 17, are in condition for allowance.

III. Claim Objections

Claims 1-20 are objected to as being indefinite because of the usage of terms "parts/part" and "are/is."

Claims 18 and 20 are canceled. Claims 1-17 and 19 are each amended to replace "parts/part" with --parts-- and to replace "are/is" with -are-.

Withdrawal of the objection is respectfully requested.

III. The Claims Define Patentable Subject Matter

Claims 1, 2, 11-14, 16 and 19 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,738,205 (Moran); claims 3, 4 and 15 are rejected under 35 U.S.C. §103(a) over Moran; claim 5 is rejected under 35 U.S.C. §103(a) over Moran in view of U.S. Patent No. 6,852,431 (Fukutani); claim 17 is rejected under 35 U.S.C. §103(a) over Moran in view of U.S. Patent No. 5,231,550 (Hashimoto); claims 6-9 are rejected under 35 U.S.C. §103(a) over Moran in view of U.S. Patent No. 6,466,387 (Ogasawara); and claim 10 is rejected under 35 U.S.C. §103(a) over Moran and Fukutani as applied to claim 5 and further in view of Ogasawara. These rejections are respectfully traversed.

Independent claims 16 and 19 are allowable, as discussed above.

Independent claim 1 recites a magnetic recording medium comprising a magnetic layer which is sectioned into a plurality of data areas and a plurality of servo areas for information recording, wherein in each of the servo areas, the magnetic layer is separated into a plurality of servo pattern unit parts for forming a predetermined servo pattern and a plurality of servo pattern gap filling parts patterned to fill gaps between the plurality of servo pattern unit parts partly, the servo pattern unit parts and the servo pattern gap filling parts being formed in a pattern of projections of the magnetic layer and recesses therebetween.

These features are not disclosed, taught or suggested by Moran. More specifically, the self-servo writing method by the use of the servo reference pattern is described in col. 6, lines 1-8 of Moran, and the concrete example of the servo reference pattern is described in Fig. 4A, Fig. 4B, and Fig. 8 of Moran.

According to Moran, the servo timing information 43, the servo position information 45, the fine position information 49 and the set 53 are parts of the servo pattern recorded magnetically in a flat magnetic layer. See of Fig. 8 of Moran. Therefore, the servo timing

information 43, the servo position information 45, the fine position information 49 and the set 53 are neither projections nor recesses.

The technology to form a magnetic layer in a pattern of recesses and projections is not described in Moran. Therefore, neither servo pattern unit parts nor servo pattern gap filling parts being formed in a pattern of projections of the magnetic layer and recesses therebetween are described in Moran.

Furthermore, the servo position information 45 is not coarse position information as described in col. 8. The servo position information 45 contains the coarse position information 47 and the fine position information 49.

Moreover, the set 53 is not servo timing information. The set 53 is a set of segments 52. Reference number 43 indicates servo timing information. The servo timing information 43 is neither the projection nor the recess.

In addition, neither the data area nor the track width is described in Fig. 4A, Fig. 4B, and Fig. 8 of Moran. Moreover, Moran describes segments having magnetic transitions wherein the direction of magnetization is generally along the circumferential direction of circular disk tracks in col. 6, lines 1-8 of Moran. However, Moran does not disclose technology where servo pattern unit parts and servo pattern gap filling parts are magnetized with opposite polarities. Even if a skilled artisan would consider the servo position information 45 and the servo timing information 43 to be a servo pattern unit part and a servo pattern gap filling part, Moran still fails to disclose technology that magnetizes servo position information 45 and servo timing information 43 with opposite polarities.

Accordingly Moran fails to disclose, teach or suggest the features of claim 1. Fukutani, Hashimoto, and/or Ogasawara fail to cure the deficiencies of Moran discussed above.

More specifically, Fukutani describes a method of changing the volume of the magnetic substance cell as a method of changing the coercivities of the magnetic substance cell. See col. 5, line 66 to col. 6, line 15 of Fukutani. Fukutani also describes the technology using change in magnetic properties such as coercivities, a residual magnetization, and magnetic anisotropies for a tracking servo signal.

However, a specific relation between a value of the volume of the magnetic substance cell and magnetic properties are not described in Fukutani. In addition, the magnetic substance cell is buried in the nonmagnetic material in Fukutani. There is no gap between magnetic substance cells.

Hashimoto discloses an example of the predetermined pattern written in advance in the recording medium. See Figs. 3A to 3D and col. 7, line 63 to col. 8, line 11 of Hashimoto.

However, this predetermined pattern is a part of the servo pattern written magnetically in a flat magnetic layer. This predetermined pattern is not a pattern of recesses and projections. Accordingly, forming a magnetic layer in pattern of recesses and projections is not disclosed in Hashimoto.

Ogasawara discloses a servo pattern. See Figs. 5 of Ogasawara.

However, this servo pattern is a part of the servo pattern recorded magnetically in a flat magnetic layer.

Furthermore, claims 6-10 of the present application recite the relation among the ratio of the areas of the recording elements in the data area, the ratio of the areas of the servo pattern unit parts in the servo area and the ratio of the total areas of the servo pattern unit parts and the servo pattern gap filling parts in the servo area. This recited relation is not a relation between the area of the servo pattern gap filling parts and the area of the recording elements.

The technology to form the magnetic layer in a pattern of recesses and projections is not disclosed in Ogasawara. Moreover, neither the ratio of the areas of the servo pattern unit parts in the servo area nor the ratio of the areas of the track in the data area are described in Ogasawara.

On the other hand, claim 1 of the present application recites:

- (1) the magnetic layer is separated into a plurality of servo pattern unit parts and a plurality of servo pattern gap filling parts;
- (2) the servo pattern gap filling parts are patterned so as to fill gaps between the plurality of servo pattern unit parts; and
- (3) the servo pattern unit parts and the servo pattern gap filling parts are formed in a pattern of projections of the magnetic layer and recesses therebetween.

As discussed above Moran, Fukutani, Hashimoto, and Ogasawara, in any combination, teach or suggest these features of claim 1.

Furthermore, the features of claim 1 have the following advantageous effects that are not taught or suggested by Moran, Fukutani, Hashimoto, and/or Ogasawara:

- (1) since the magnetic layer is separated into the plurality of servo pattern unit parts and the servo pattern gap filling parts and the servo pattern gap filling parts are formed in a pattern of projections of the magnetic layer and recesses therebetween, recording of servo information is easy;
- (2) since servo pattern gap filling parts are patterned so as to fill gaps between the plurality of servo pattern unit parts, the current of air between the medium and a head does not fall into disorder easily because the surface is flatter than the magnetic recording medium without servo pattern gap filing parts; therefore, the behavior of the head is steady; and
- (3) since the gaps between the plurality of servo pattern unit parts are partially filled with the servo pattern gap filling parts, and the servo pattern gap filling parts are formed

as a part of the magnetic layer, manufacturing of the medium is easier than case where servo pattern filling parts are formed of other material; therefore it is advantageous in the point of productivity.

Furthermore, claims 14 and 15 of the present application are amended, and the servo pattern unit part and the servo pattern filling parts are magnetized in opposite polarities in a direction vertical to a surface. Therefore, claims 14 and 15 have different composition from the description of col. 6, lines 1-8 of Moran. (The segments have magnetic transitions wherein the direction of magnetization is generally along the circumferential direction of circular disk tracks).

For the foregoing reasons, Moran, Fukutani, Hashimoto, and/or Ogasawara, in any combination fail to anticipate or render obvious the subject matter of claims 1-17 and 19.

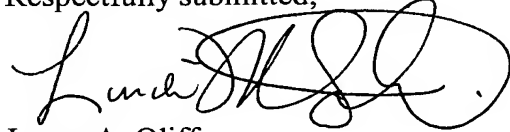
Withdrawal of the rejections is requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Petition for Extension of Time

Date: March 10, 2006

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